

**THE ARB BORD OF HEALTH SPECIALIZATIONS
SCIENTIFIC COUNCIL OF ANAETHESIA**

**FINAL EXAM – PAPER ONE
16 SEPTEMBER 2014
9– 11 A.M**

NAME:

NUMBER:

CENTER:

- ✓ 1. **Regarding invasive blood pressure measurement:**
- A. Fluid bag should be kept 100mm/Hg above systolic pressure
 - B. Natural frequency of the diaphragm should be kept at equal to frequency of the BP.
 - C. Fluid level should be at 60cm above the heart.
 - D. Flushing the system could damage the heart valves.
 - E. Critical damping is adjusted according to natural frequency.
2. **Factors influencing rebreathing are all of the following EXCEPT:**
- A. Back flow
 - B. Fresh gas flow
 - C. Mechanical dead space
 - D. Design of breathing system
 - E. Type of endotracheal tube
- ✓ 3. **Hundred grams of soda lime can absorb as much as**
- A. 10 liters of carbon dioxide
 - B. 16 liters of carbon dioxide
 - C. 20 liters of carbon dioxide
 - D. 26 liters of carbon dioxide
 - E. 35 liters of carbon dioxide
4. **The laryngeal mask may be useful for the followings EXCEPT:**
- A. Spontaneous breathing
 - B. Resuscitation
 - C. Intermittent positive pressure ventilation
 - D. Microlaryngoscopy
 - E. Ophthalmic anaesthesia
5. **During a long operation, most reliable monitors of core temperature include:**
- A. Temperature probe at the tympanic membrane
 - B. Temperature probe in the rectum
 - C. Quadriceps muscle temperature
 - D. Temperature probe in the nasopharynx
 - E. Temperature probe in the oesophagus at the level of the cricoid

6. **BAIN CIRCUIT , all true EXCEPT:**
- A. High flow is supplied to overcome the rebreathing
 - B. High flow is needed due to the fact that no reservoir bag as in Mapleson A circuit.
 - C. High flow is needed to meet the patient peak expiratory flow.
 - D. The bag is provided mainly for manual ventilation & to see the patient breathing.
 - E. The circuit can be used in mechanical ventilation
7. **Which one of the following is the most appropriate action after an anesthetic vaporizer is tipped?**
- A. Flush the vaporizer with oxygen at 5L/min for 24 hours.
 - B. Return to the manufacturer for recalibration.
 - C. Verify the vaporizer output with mass spectrography.
 - D. Store the vaporizer for 24 hours at room temperature.
 - E. Set the vaporizer at low concentration and flush with oxygen at 10 L/min for 30 minutes.
8. **At high altitude (6000 m) all true EXCEPT**
- A. The barometric pressure is the same as sea level
 - B. FIO₂ is 0.21
 - C. The saturated vapour pressure of water is 6.3 kPa at 37 degrees C
 - D. The boiling point of water would be low
 - E. Hypoxia predominate the ventilator drive
9. **Cellular telephones commonly cause interference with a medical device if**
- A. Used anywhere within a hospital
 - B. Used by a patient having an implanted cardiac defibrillator
 - C. Used while standing next to an anesthesia machine
 - D. Carried in a shirt pocket overlying a cardiac pacemaker
 - E. Used by a patient having an intracranial aneurysm clip
10. **The lifetime of a canister of soda lime**
- A. Depends on the method of filling
 - B. Is independent of the volume of CO₂ exhaled
 - C. Is independent of the location of the relief valve
 - D. Is prolonged by low gas flows
 - E. Is shortened by channeling

11. Effect of hypokalaemia is:

- A. Short PR interval
- B. Ventricular extrasystoles
- C. Elevated ST segments
- D. Long QRS interval
- E. Long QT interval

12. Concerning ECG , all true EXCEPT:

- A. The Q-T interval varies with heart rate
- B. In hypokalaemia the T wave is flattened.
- C. The U wave is more often seen when the heart rate is low. -
- D. A long QT interval is characteristic of hypocalcaemia.
- E. Left axis deviation occurs in left ventricular hypertrophy.

6

13. Which of the following is believed responsible for blindness in TURP syndrome?

- A. Sorbitol
- B. Glycine
- C. Mannitol
- D. Urea
- E. Glycogen

2

14. Concerning renal transplant, all are true EXCEPT:

- A. Patients should be recently dialyzed
- B. Check state of hydration – haematocrit
- C. Check acid-base status, K⁺, Ca⁺⁺, Na⁺,
- D. Check coagulation status
- E. HB – levels <5.0 g/dl should be treated with 5-6 unit blood

15. For patients undergoing vascular surgery, myocardial ischemia most likely to occur?

- A. Preoperatively
- B. During the induction of anaesthesia ✓
- C. Intraoperatively
- D. In the immediate post operative period -
- E. 48-72 hours post operatively

16. Concerning pulmonary embolism, all true EXCEPT?

- A. Increase right ventricular afterload .
- B. Increase pulmonary arterial pressure leading to right ventricular dilatation .
- C. Delayed in right ventricular emptying, leading to splitting of heart sounds
- D. Decrease in the jugular venous pressure (JVP)
- E. Reduced pulmonary blood flow

8

17. In surgical correction of scoliosis, all are true **EXCEPT**:

- A. Carries low risk of spinal cord damage
- B. Is monitored by somatosensory evoked potentials
- C. Is facilitated by induced hypotension
- D. May involve division of the diaphragm
- E. Typically requires post operative ventilation for several days

18. All the following are absolute indications for one-lung ventilation **EXCEPT**:

- A. Pneumonectomy
- B. Massive hemorrhage
- C. Bronchopleural fistula
- D. Unilateral abscess
- E. Bronchopulmonary lavage

X 19. Midazolam, all are true **EXCEPT**:

- A. Has an elimination half-life of 6 hours
- B. Imidazole ring contributes to its water solubility at low pH
- C. Metabolites are excreted chiefly in the urine
- D. Can have a prolonged effect if given with erythromycin
- E. Well absorbed after i.m injection with peak level achieved in 90 minutes

20. Barbiturates, all are true **EXCEPT**:

- A. Activate the reticular activating system in the brain stem
- B. More potently affect the function of nerve synapses than axons
- C. Potentiate the action of GABA
- D. Induction doses cause a decrease in blood pressure and an increase in heart rate
- E. The phenyl group in Phenobarbital is anticonvulsant

X 21. Which drug is an imidazole derivative?

- A. Thiopental
- B. Ketamine
- C. Propofol
- D. Etomidate
- E. Methohexital

X 22. Ketamine, all are true **EXCEPT**:

- A. Is a structural analogue of phenylcyclidine.
- B. Inhibits polysynaptic reflexes in the spinal cord.
- C. Dissociates the thalamus from the limbic system.
- D. Is useful for i.m induction in uncooperative patients.
- E. Has no active metabolites

23. The speed of uptake of an anesthetic agent from the lung:

- A. Is temperature dependent
- B. Is proportional to the minimum alveolar concentration
- C. Is proportional to the blood/gas solubility
- D. Is proportional to the cardiac output
- E. Is not proportional to the minute ventilation

24. Concerning the clinical use of opioids, All are true EXCEPT:

- A. Pethidine is effective in reducing shivering from diverse causes
- B. Fentanyl is metabolized to norfentanyl
- C. Fentanyl has a large volume of distribution
- D. Sufentanil has a clinical potency 100 times that of morphine.
- E. Remifentanyl does not accumulate even after prolonged infusion.

25. Cisatracurium: one TRUE:

- A. Undergoes no urinary excretion.
- B. 0.2 mg/kg offered acceptable intubating conditions at 60 seconds.
- C. Has an elimination half life of 20 – 30 min.
- D. Produces more laudanosine than equipotent dose of Atracurium.
- E. Is less potent than Atracurium.

26. The MAC (minimum alveolar concentration) is reduced in:

- A. Febrile subjects.
- B. Female sex.
- C. Chronic alcoholism.
- D. Prolonged duration of anaesthesia.
- E. Hypothyroidism.

27. One of the following is true of inhalational anaesthetic agents:

- A. Halothane is irritant to the airway.
- B. Isoflurane is a structural isomer of Halothane.
- C. Sevoflurane is fluorinated ether.
- D. Desflurane is a halogenated hydrocarbon.
- E. Enflurane is halogenated methylethyl ether.

28. Systemic vascular resistance is LEAST changed with:

- A. Isoflurane
- B. Sevoflurane
- C. Desflurane
- D. Enflurane
- E. Halothane

- X 29. All of the following drugs may cause urinary retention EXCEPT:
- A. Morphine
 - B. Ephedrine
 - C. Atropine.
 - D. Amitriptyline
 - E. Ketamine
30. All of the following are true for Tramadol EXCEPT:
- A. Its analgesic potential is believed to be mediated weakly through its effect on the mu-opioid receptor
 - B. Has effect on 5-HT₃ and noradrenergic receptors
 - C. Has antiemetic effect
 - D. Produces antinociception
 - E. Has an inhibitory effect on shivering
31. Concerning context-sensitive half-time:
- A. It depends on the concentration of drug in plasma when the infusion is stopped.
 - B. It is the inverse of the rate constant for excretion times.
 - C. After two context-sensitive half-times the plasma concentration will be one quarter of its value at the end of infusion.
 - D. The context-sensitive half-time for Remifentanyl is shorter than that for propofol.
 - E. It will increase linearly in proportion to the duration of infusion.
- X 32. All the following are true regarding cardiac arrest in the first 24 hours post cardiac surgery EXCEPT
- A. Can occur due to disconnection of the pacing system in pacing dependent patients
 - B. Tension pneumothorax can lead to cardiac arrest during this period
 - C. Incidence of cardiac arrest can reach up to 3%
 - D. Survival to hospital discharge is around 20%
 - E. The effectiveness of cardiac compression can be verified by looking at arterial trace
- X 33. Regarding myocardial protection during cardiopulmonary bypass, all true EXCEPT:
- A. Myocardial hypothermia with myocardial temperature goals below 12-15 °C
 - B. Adequate cardioplegia
 - C. Topical cooling of the heart with icy saline slush
 - D. Right ventricular venting to prevent distention
 - E. Insulating pad on the posterior cardiac surface to prevent warming from mediastinal blood flow

34. One of the following is true regarding fluid loss in burn:

- A. Is proportional to the degree of burn
- B. Maximal during the first 24 hours
- C. Is more protein containing fluids
- D. It is due to increase urine output ×
- E. Should be replaced by blood ×

35. An elevated left hemidiaphragm can be caused by all the following EXCEPT:

- A. Left phrenic nerve paralysis
- B. Left lower lobe collapse
- C. Sinus inversus
- D. Left pleural effusion
- E. Left pneumothorax

18

36. A patient with esophageal obstruction is to have a general anesthetic for esophagoscopy. He has had a barium swallow on the previous day. One of the greatest danger of the planned procedure is

- A. Bleeding
- B. Hypotension
- C. Difficult intubation
- D. Aspiration
- E. arrhythmia

19

37. Use of vasoconstrictors is least effective in prolonging anaesthetic action with which one of the following local anaesthetics

- A. Lidocaine
- B. Ropivacaine
- C. Procaine
- D. Prilocaine
- E. Amethocaine

38. Which of the following is true concerning metabolism of local anaesthetics :

- A. All local anaesthetics are metabolized in the liver
- B. Amide local anaesthetics are metabolized by Hoffman degradation
- C. Ester type local anaesthetics undergo hydrolysis by pseudocholinesterase
- D. Risk of ester toxicity decreases in neonates
- E. Ester type local anaesthetics undergo hydrolysis by non specific esterase

20

39. Which of the following inhalational agents causes reduced blood pressure and heart rate :

- A. Isoflurane
- B. Halothane
- C. Desflurane
- D. Nitrous oxide
- E. Sevoflurane

21

40. Propofol, all true EXCEPT:

- A. It is extensively used in the intensive care unit as a sedative
- B. It has high clearance
- C. Significant accumulation may occur
- D. It is used for Total intravenous anaesthesia
- E. Bradycardia can be a side effect

22

X 41. Dexmedetomidine , which one of the following is TRUE :

- A. It is an alpha 1 antagonist
- B. It has elimination half life of 20 minutes
- C. It produces profound analgesia and sedation without respiratory depression
- D. It acts on both alpha1 and 2 equally
- E. It causes tachycardia

23

X 42. Esmolol, all the following are true EXCEPT :

- A. It has elimination half life of 20 min
- B. It is a beta 1 selective blocker
- C. It is metabolized by esterases in blood
- D. It may cause hypotension
- E. It is useful in management of supraventricular tachycardia

24

X 43. Dobutamine , all the following are true EXCEPT

- A. It is a synthetic inotrope
- B. It has very dominant beta 1 effect
- C. It has a small Beta 2 effect
- D. It stimulates dopaminergic receptors
- E. It can be used in cardiogenic shock in conjunction with noradrenaline

44. Regarding Ephedrine, all true EXCEPT

- A. It is a bronchodilator
- B. It has alpha and beta effect
- C. It is used in hypotension following spinal anaesthesia in obstetrics
- D. It has longer duration than adrenaline
- E. It decreases MAC of anaesthetics

25

45. Glycopyrrolate, all the following are true **EXCEPT** :

- A. It is a quaternary ammonium compound
- B. It cannot cross the blood-brain barrier
- C. It may produce delirium
- D. It is an anticholinergic drug
- E. It is contraindicated in patients with narrow angle glaucoma

26

46. During a rapid sequence induction, when would it be appropriate to release cricoid pressure?

- A. When the patient becomes unconscious.
- B. After the induction agent has been given but before the neuromuscular blocking drug is given.
- C. After proper placement of the endotracheal tube has been confirmed.
- D. Cricoid pressure is not indicated in this instance
- E. After good visualization of the vocal cords .

21

47. During CPR the code leader sees that there is no CO₂ waveform. What is **MOST** likely?

- A. Ineffective CPR
- B. Hypoventilation
- C. Esophageal intubation
- D. Low cardiac output
- E. Obstructed airway

28

48. What is the percentage of burned area for a 7 y/o with burns on the left side of the body, front and back?

- A. 34%
- B. 43%
- C. 29%
- D. 51%
- E. 75%

29

49. A patient who had been consuming large amount of a potassium chloride salt substitute, in addition to taking lisinopril for hypertension is found in the emergency to be hyperkalemic and develops stable ventricular tachycardia

What is most appropriate drug to be administered first?

- A. Epinephrine
- B. Calcium chloride
- C. Sodium bicarbonate
- D. Furosemide
- E. Insulin

30

50. Which of the following anesthetic drugs increase intraocular pressure?

- A. Depolarizing muscle relaxants
- B. Nondepolarizing muscle relaxants
- C. Benzodiazepines
- D. Barbiturates
- E. Clonidine

31

X 51. About muscles relaxants choose the TRUE

- A. The metabolism of Cisatracurium is by: Ester hydrolysis
- B. Interaction between Mivacurium-Cisatracurium is synergistic
- C. The administration of succinylcholine following reversal of neuromuscular blockade results in Prolongation of the action of succinylcholine
- D. Sugamadex is a reversal for all non depolarising muscle relaxants
- E. The best neuromuscular test to ensure the absence of sudden movements during ophthalmic surgery is TOF (train of four)

32

X 52. Stroke following carotid endarterectomy surgery is mainly caused by:

- A. Hypotension only
- B. Thrombosis only
- C. Embolic events only
- D. Thrombosis and hypotension
- E. Hypotension and embolic events

53. Concerning the anesthetic management of a patient with aortic stenosis consists of, all true EXCEPT:

- A. The avoidance of systemic hypotension
- B. Maintenance of sinus rhythm
- C. Maintenance of adequate intravascular volume
- D. Management of an elevated risk of myocardial ischemia.
- E. Management of hypotension with ephedrine and decrease oxygen demand

33

X 54. Prolonged irrigation of the bladder with isotonic saline for transurethral resection of the prostate is associated with:

- A. Confusion
- B. Hyponatraemia
- C. Hyperkalaemia
- D. Reduced osmolarity
- E. Haemolysis

55. In a patient who has had a traumatic quadriplegia for one week, all true EXCEPT:

- A. Intermittent positive pressure ventilation can cause hypotension
- B. Suxamethonium sensitivity occurs
- C. Retention of urine occurs
- D. Increased tendon jerks occur
- E. Steroids improve prognosis

56. The 2010 AHA Guidelines for CPR and ECC emphasize the need for high-quality CPR, including all the following EXCEPT:

- A. A compression rate of at least 100/min
- B. A compression depth of at least 2 inches (5 cm) in adults
- C. A compression depth of at least one third of the anteroposterior diameter of the chest in infants and children
- D. Allowing for complete chest recoil after each compression
- E. Ventilation rate of 15/min

34

57. The 2010 AHA Guidelines for CPR and ECC recommend all the following EXCEPT:

- A. Rescue breaths be given in approximately 1 second
- B. Compressions should be synchronized with ventilation once an airway device is inserted
- C. A change in the BLS sequence of steps from A-B-C (Airway, Breathing, Chest compressions) to C-A-B (Chest compressions, Airway, Breathing)
- D. The one rescuer should begin CPR with 30 compressions rather than 2 ventilations to reduce delay to first compression
- E. "Look, listen, and feel" was removed from the CPR sequence.

35

58. Patients likely to develop adult respiratory distress syndrome include those suffering from, all the following EXCEPT:

- A. Severe abdominal sepsis
- B. Renal failure
- C. Haemorrhagic shock
- D. Prolonged high-concentration oxygen therapy
- E. Burns to the limbs and trunk.

59. Causes of a primary metabolic acidosis include all the following EXCEPT:

- A. Vomiting
- B. Hydronephrosis
- C. Hypocalcemia
- D. Diabetes mellitus
- E. Intestinal fistulae

36

- X 60. For spironolactone select the portion of the nephron **MOST** responsible for its pharmacological effect
- A. Proximal tube
 - B. Descending limb of loop of Henle
 - C. Thin ascending limb of loop of Henle
 - D. Thick ascending limb of loop of Henle
 - E. Collecting duct
- X 61. A patient takes a tricyclic antidepressant and needs surgery. This patient:
- A. May have increased number of arrhythmias
 - B. Should have pancuronium and halothane as drugs of choice
 - C. Should stop the medication before surgery
 - D. May become hypotensive with ketamine
 - E. May have rapid emergence with thiopental
62. Antiplatelet agents include all of the following **EXCEPT**
- A. Acetylsalicylic acid
 - B. Acetaminophen
 - C. Ticlopidine (Ticlid)
 - D. Dipyridamole (Persantine)
 - E. Garlic
- 37
63. This catecholamine simultaneously can increase myocardial contractility, glomerular filtration rates, sodium excretion, urinary output, and renal blood flow:
- A. Phenylephrine
 - B. Isoproterenol
 - C. Dobutamine
 - D. Dopamine
 - E. Epinephrine
- 38
- X 64. Epidural analgesia in obstetrics is absolutely contraindicated in which of the following conditions:
- A. Refusal of the surgeon.
 - B. Left ventricular failure.
 - C. Pulmonary hypertension.
 - D. Placenta praevia.
 - E. Previous spinal surgery
- 39
hemodynamic instability

65. Saphenous nerve block is indicated in:

- A. Tourniquet pain prevention
- B. Lateral malleolus surgery
- C. Calf surgery
- D. Great toe surgery
- E. Knee surgery

41

66. An interscalene block can lead to all of the following complications

EXCEPT :

- A. Seizures after injection of 2ml of local anesthetics
- B. Spinal anesthesia
- C. Respiratory distress
- D. Facial nerve paralysis
- E. Hematoma

42

67. About ultrasound-guided Popliteal nerve block, which statement is

TRUE?

- A. Provides complete anesthesia to foot and ankle
- B. Is done alone when thigh tourniquet is used
- C. Circumferential spread usually results in a complete block
- D. Can only be performed by the lateral approach
- E. Color doppler is not useful

43

68. Comparing alfentanil with fentanyl, indicate which is false:

- A. Fentanyl has a lower potency .
- B. Fentanyl is more ionized at pH 7.4.
- C. Fentanyl has a larger volume of distribution.
- D. Fentanyl has a higher clearance.
- E. Alfentanil is more protein bound.

69. Comparing lignocaine with prilocaine , which one is true?

- A. Lignocaine has a higher pKa.
- B. Lignocaine is less protein bounding.
- C. Lignocaine and Prilocaine were same potency .
- D. Lignocaine has a lower molecular weight.
- E. Lignocaine is less lipid soluble.

70. Concerning midazolam, which is true

- A. The onset of action is slower than diazepam
- B. The parenteral preparation is formulated in propylene glycol.
- C. It is highly lipid soluble at physiological pH .
- D. About 50% is excreted unchanged in the urine.
- E. It has no active metabolite.

40

71. Concerning desflurane, which is true ?

- A. It is a chlorinated methyl ethyl ether
- B. It has a boiling point approximately the same as that of isoflurane
- C. It has a molecular weight which is the same as that of enflurane
- D. It is stable in soda lime
- E. About 2% is recoverable as metabolite

72. Ropivacaine, which is true:

- A. Is a racemic mixture of the S and R isomers
- B. Shows an improve motor-sensory separation of local anaesthetic effects that is useful in providing pain relief
- C. Has a lessorKathan the Bupivacaine
- D. Demonstrates similar lipid solubility to bupivacaine
- E. Is more toxic than bupivacaine.

73. Regarding antiemetics, which one of the following statements is true?

- A. Dexamethasone has been shown to downregulate 5-HT₃ receptors in the chemoreceptor trigger zone
- B. As an anticholinergic, glycopyrrolate has useful antiemetic properties
- C. Cyclizine acts as an antiemetic by antagonism of muscarinic acetylcholine receptors
- D. Ondansetron exerts antagonism at 5-HT₃ receptors only in the chemoreceptor trigger zone and the nucleus tractussolitarius
- E. Nabilone is an antagonist at endogenous cannabinoid receptors ✓ 41

74. All the followings are true regarding Rocuronium, Except :

- A. Is more potent than vecuronium .
- B. Is chemically related to vecuronium.
- C. In suitable doses produces good intubating conditions in 60- 90 s.
- D. Rocuronium and vecuronium, both can be reversal by Suggamadex.
- E. Possesses no active metabolites.

75. Sevoflurane, which is false

- A. Is an ether
- B. About 5% undergoes biotransformation in the liver .
- C. Releases carbon monoxide when in contact with soda lime
- D. Has a lower SVP than isoflurane
- E. Has a blood:gas partition coefficient approximately half that of isoflurane

GOOD LUCK